

HRF MARES INITIAL DEPLOYMENT

OBJECTIVE: To reconfigure the MARES Rack from launch configuration to deployed.

(M01, M02 bags, LSA/Main Box temp stowed with bungees. Fences, struts temp stowed in Inflight Stowage Restraint Bag. Foot Restraints, Payload Utility Light used at crew discretion.)

STATION TOOLS:

Ratchet, 3/8" Drive, 7-3/8" Long, Sealed
Breaker Bar, 3/8" Drive
Hex Head Driver, 3/8" Drive, 3/16"
Hex Head Driver, 3/8" Drive, 5/16"
Hex Head Driver, 3/8" Drive, 3/8"
Metric Standard Hex Head Driver, 3/8" Drive, 8mm
Metric Standard Hex Head Driver, 3/8" Drive, 5mm
Metric Standard Hex Head Driver, 3/8" Drive, 3mm
Extension, 3/8" Drive, 11" Long
Extension, 3/8" Drive, 6" Long
Extension, 3/8" Drive, 4" Long
Torque Set, Apex Bit, #10 long
Torque Wrench, 3/8" Drive, 150-1000 In-lbs
Scissors
Grey tape, baggie for temp stow of bolts, tools.
Bungees for temp stow of bags, fences, struts, and Main Box back cover

STATION PARTS:

HRF MARES Rack
Foot Restraints
Payload Utility Light
Inflight Stowage Restraint Bag
Driver/Drill Kit

1. Release strap latches (5) of M01 bag. Remove bag from rack, temp stow.
2. Release strap latches (4) of M02 bag. Remove bag from rack, temp stow.

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3. Attach 3/8" Hex Head, 3/8" Drive to Ratchet, 1/4" Drive
4. Using 1/4" Hex Head and Ratchet, remove bolts (2) at top horizontal fence corners. Temp stow bolts.
5. Depress top horizontal fence latches (5) to release fence. Temp stow in Inflight Stowage Restraint Bag
6. Repeat steps 4,5 for remaining horizontal (2) fences.
7. Latch and tighten M01, M02 bag straps (9), tucking in loose ends.
8. Using 3/8" Hex Head and Ratchet, remove the LSA/LSP bolts from the rack (10 total; 4 either side, one each top center, bottom center of plate). Temp stow bolts.
9. Using #10 Torque Bit and Ratchet, remove the bolts (2) from the middle pair of fence brackets (one either side). Temp stow brackets (2) and bolts (4) in baggie.
10. Rotate LSA/LSP to perpendicular from rack.
11. Release strap latches (5) of Linear Adapter bag. Remove bag from plate, temp stow.
12. Remove shear pins at fence corners (4). Depress top horizontal fence latches (2) to release fence. Temp stow in Inflight Stowage Restraint Bag.
13. Repeat for remaining horizontal and vertical fences. Separate vertical fences in to 2 parts prior to temp stowing.
14. Using scissors, cut vertical and upper and lower straps at brackets to remove from LSP. Temp stow. Leave center horizontal strap.
15. Remove corner shear pins of lower short struts. Remove strut/bracket from rack. Reinstall shear pins on struts. Fold strut/bracket to temp stow in Inflight Stowage Restraint Bag.
16. Remove corner shear pins of lower long strut. Remove strut from rack. Reinstall shear pins on strut. Temp stow strut in Inflight Stowage Restraint Bag.
17. Repeat for upper struts.
18. Using 1/4" Hex Head and Ratchet, remove bottom strut fitting bolts (4) at rack structure. Temp stow fittings (2) and bolts (8) in baggie.
19. Attach 3mm Hex Head, 3/8" Drive to Ratchet, 3/8" Drive
20. Remove back cover of MARES Main Box (13 fasteners) and temp stow
21. Retrieve, from M01 bag:
 - i. Supervision Electronics box (3 bolts)
 - ii. Servo drive box
 - iii. Power Electronics module (4 bolts)
 - iv. Control Electronics box
 - v. Hard Drive Bay (4 bolts)

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vi. Battery (4 bolts)

Using 3mm hex head and ratchet, integrate the electronics boxes and battery into the main housing

22. Replace MARES Main Box back cover
23. Attach 5/16" Hex Head, 3/8" Drive, 11" Extension, 3/8" Drive, 6" Extension, 3/8" Drive to Ratchet, 3/8" Drive
24. Using 5/16" hex head, extensions and ratchet, remove 24 bolts from LSA plate (with Main Box attached). Temp stow LSA/Main Box
25. Release LSP from rack, rotate 180 degrees and install at back of rack. Install bolts (4).
26. TBD - Attach 3/8" Hex Head, 3/8" Drive to (150-1000 in-lbs) Torque Wrench, 3/8" Drive
27. TBD - Using 3/8" hex head and torque wrench, torque LSP corner bolts to xxx inch-lbs.
28. Open latching mechanism on LSP. Attach MARES Main Box to LSP aligning 4 Main Box pins to holes. Close mechanism.
29. Attach 8mm Hex Head, 3/8" Drive to Ratchet, 3/8" Drive
30. Using 8mm hex head and ratchet, disengage captive bolts (14) from LSA.
31. Attach 5mm Hex Head, 3/8" Drive to Ratchet, 3/8" Drive
32. Using 5mm hex head and ratchet, disengage captive bolts (6) to release the LSA from the MARES Main Box. Temp stow LSA.
33. Rotate Main Box static lever counterclockwise to access Pantograph mounting points.
34. Retrieve Pantograph from M01 Bag and attach to the Main Box (4 alignment pins, 2 bolts)
35. Retrieve the chair column (chair attached) from M01 Bag and attach to the Pantograph
36. Retrieve upper restraint/cushions from M01 Bag and attach to the chair
L/R shoulder support, L/R shoulder anchor, L/R shoulder pad
Lumbar pad, seatbelts, lateral seat pads, etc. may need to be attached
(cushions should be launched installed (35 cushions (2 L, 5 M, 28 S)))
37. Retrieve VIF Horizontal Bars from Linear Adapter Bag.
38. Retrieve VIF Vertical Bars and spacers from M02 Bag. Assemble with Horizontal Bars. Temp stow VIF.
39. Reinstall Linear Adapter Bag in rack. Restrain with center strap.
40. Retrieve On-Orbit Stowage Bag pouch from M01 Bag
41. Remove foam and contents from M02 bag, install in On-Orbit Stowage Bag

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42. Place contents of Inflight Stowage Restraint Bag (fences, fence brackets, bolts and straps) and LSA in M01 Bag
43. Rotate chair to stowage orientation
44. Install On-Orbit Stowage Bag on rack.
45. Install VIF on front of rack
46. Stow M01, M02 bags for return.
47. Stow Inflight Stowage Restraint Bag, tools.